The Afghanistan Engineering Support Program assembled this deliverable. It is an approved, official USAID document. Budget information contained herein is for illustrative purposes. All policy, personal, financial, and procurement sensitive information has been removed. Additional information on the report can be obtained from Firouz Rooyani, Tetra Tech Sr. VP International Operations, (703) 387-2151.

Site Visit Report

		Project: **WO-A-0106 - Inspection/Verification of Outstanding Punch List Items Rectification and Witnessing T&C of Systems at Gardez and Khair Kot Hospitals**
Location: **Gardez - Paktia, Khair Kot - Paktika**		Contract: **N/A**
Inspection Dates**:** **Gardez 100-Bed** June 25, 2016 **Khair Kot 20-Bed** June 30, 2016		Coordinates: **Gardez 100-Bed:** N 33 37 47.73 E 69 13 53.32 **Khair Kot 20-Bed:** N 325053.29 E 682725.165
Project Inspectors: **Gardez 100-Bed:** Mohammad Shah Adli, Abdul Wali Waleed, Waleed Mahdi **Khair Kot 20-Bed:** Ayoub Ayoubi, Fattah Wardak and Faridullah Haidary	Status: **N/A**	Report Date**:** **July 12, 2016**

PRESENTED TO

United States Agency for International Development (USAID) Office of Economic Growth and Infrastructure (OEGI)

Great Massoud Road
Kabul, Afghanistan

PRESENTED BY

Tetra Tech, Inc.
Afghanistan Engineering Support Program
Contract No. EDH-I-00-08-00027-00
Task Order No. 1

Shash Darak
Kabul, Afghanistan

Tt Prepared by:

[redacted]

Name: [redacted] Date:
Title: **Senior Mechanical Engineer** **07/12/2016**

Tt Approved by:

[redacted]

Name: [redacted] Date:
Title: **Deputy Director - Construction Management Services** **07/12/2016**

EXECUTIVE SUMMARY

The United States Agency for International Development (USAID) officially transferred two new hospitals in Paktia and Paktika provinces to the Ministry of Public Health (MoPH), which will significantly contribute to improved access to healthcare for Afghan communities in the region.

To support the Government of Afghanistan (GIROA) in improving service delivery in the education and health sectors, USAID funded the $57 million Construction of Health and Education Facilities (CHEF) program to provide health and education facilities in Afghanistan. The facilities, designed and constructed under the CHEF program, are energy efficient and built in accordance with the International Building Code and standards. Two of the facilities constructed under this program were the 100-bed hospital in Gardez and the 20-bed hospital in Khair Kot.

These hospitals were substantially completed in December 2015. During the joint substantial completion inspection of these two facilities conducted by International Relief & Development (IRD) and International Organization for Migration (IOM), punch lists (PLs) were created for contractors to rectify. During the joint visits, the testing and commissioning (T&C) of the systems was not witnessed by USAID/IRD, as the contractor was not prepared to conduct the testing and commissioning for both hospitals. As the implementer of the program, IOM was responsible to rectify these PL items and to make the systems ready for the T&C that needed to be witnessed by USAID or USAID's third party QA services provider. IOM was unable to rectify all outstanding PL items before March 10, 2016, when USAID's QA services provider, IRD, completed its services. Therefore, USAID was unable to verify and confirm the rectification of the PL items and witness the T&C of the remaining systems.

On June 1, 2016, USAID requested that Tetra Tech (Tt) Afghanistan Engineering Support Program (AESP), coordinate with the IOM/CHEF Point of contact (POC) to visit each of these projects under an administrative work order. Tt AESP was requested to inspect and verify the current status of the outstanding PL items created during the joint visit by IOM & IRD and to witness the testing and operation of the remaining systems.

1.0 INTRODUCTION

100-bed Gardez Hospital

The purpose of the site visit to the 100-bed Gardez hospital was for Tt and IOM to jointly verify and confirm the rectification of the outstanding punch list (PL) items and to observe the testing and commissioning of the remaining equipment and systems (not previously tested/witnessed by USAID or a QA services provider). Tt coordinated with the IOM/CHEF POC to arrange logistics and the arrival of the Tt engineering team to the site.

On June 25, 2016, Tt Site Inspectors arrived at the 100-bed Hospital in Gardez of Paktia Province. The Tt team inspected the status of all 16 PL items that were generated from the previous IRD/IOM joint substantial completion inspection and which was provided to Tt by USAID prior to Tt's site visit. All 16 outstanding PL items (including two civil/architectural/mechanical/miscellaneous, six electrical, three site works and five general works) were inspected and verified by Tt engineering team. As a result of this inspection, Tt site inspectors observed all PL items and found that all the 11 remaining PL items which were not transferred to the warranty period list were rectified. The five remaining PL items which were transferred to the warranty period list still needed rectification by the contractor. Therefore, Tt recommends all remaining eleven PL items to be closed under the Part-I, 100-Bed Gardez Hospital outstanding PL, and the other five PL items still remain open.

The HVAC system was tested and commissioned by IOM QC in the absence of USAID/IRD representatives, using a third party testing agency. The T&C certificates of the air handling and exhaust system, certified and stamped by the testing company, were provided to Tt by IOM. Tt reviewed the testing certificate for the air handling and exhaust systems and found it to be satisfactory. Tt Site Inspectors witnessed and verified the operation of HVAC system on the site and found it to be in good condition. Tt inspectors reviewed the test report provided to Tt by IOM for the fan coil system and found it unsatisfactory. Although the Testing and Validation report for the fan coil system was dated November 16, 2015, and stamped by AIRFLOW, the TAB (Testing, Adjusting & Balancing) contractor, there was about 20-80% deviation between design and actual test measured values. According to [redacted], the Project Manager/Senior Mechanical Engineer for the 100-

Bed hospital, AIRFLOW returned to the site on January 16, 2016, and undertook a second test after adjustments to the system were made. IOM has yet to provide the second test report, certified and validated by the testing company.

20-bed Khair Kot Hospital

The purpose of the site visit to the 20-bed Khair Kot hospital was to verify and confirm the completion of outstanding PL items and to witness the testing and operation of remaining systems at the Khair Kot 20-bed hospital. Tt was requested to coordinate with IOM/CHEF POC to arrange this site visit.

On June 30, 2016, Tetra Tech (Tt) Site Inspectors conducted a site visit to the 20-bed Hospital in Khair Kot of Paktika province to inspect and witness the outstanding PL items and to witness/verify the testing and operation of remaining systems. Prior to arriving to the hospital, the Tt Site Inspectors completed an in-depth review of all documents provided for the project.

The Tt team inspected the status of all eleven PL items (including electrical, mechanical, civil, architectural and general work) referenced and identified outstanding items in the USAID Punch List under the Part-2; 20-Bed Khair Kot Hospital. The HVAC system was previously tested and commissioned, and witnessed by USAID/IRD, and they found that the air flow at the furthest point of the facility was insufficient. After detailed inspections by IOM QC, it was observed that the installed Air Handling Unit (AHU) had insufficient air movement capacity, resulting in inadequate air flow to all parts of the facility. IOM had promised to replace the AHU with other unit of greater capacity. During the site visit, Tt Inspectors checked and found that IOM had not replaced the original AHU as of June 30, 2016. Tt Inspectors also witnessed testing and operation of Fuel Transfer Pumps and LPG System, and observed that both pumps and LPG system were functioning properly. Tt inspectors closed most of the remaining PL items (items not transferred to the warranty period list) as explained within the subsequent paragraph in the report.

2.0 SITE VISIT

100-bed Gardez Hospital

Tt Site Inspectors traveled to Gardez of Paktia Province on June, 25, 2016. The engineering team conducted the site visit together with IOM representatives. Tt engineers inspected and verified the outstanding PL items and visually observed the operation of the remaining systems not tested and witnessed by USAID/third party QA. Findings of this site inspection and evaluation are documented in this report, including photos and some supporting documents provided in other sections.

20-bed Khair Kot Hospital

The Tt Site Inspectors from Tt AESP traveled to Khair Kot of Paktika province and visited the site on June 30, 2016. Tt inspectors inspected and verified the outstanding PL items and witnessed the operation of remaining systems. Findings of this site inspection and evaluation are documented in this report, including photos and some supporting documents provided in other sections.

3.0 SITE VISIT DETAILS

100-bed Gardez Hospital

Prior to the site visits, the Tt Site Inspectors reviewed all the available drawings, specifications, punch list items, scope of work and all other project related documents provided to Tt.

During the inspection period, Tt engineers noted the following:

- **Outstanding Punch List Items for 100-Bed Gardez Hospital**

    a. Outstanding Civil, Architecture and Mechanical (Miscellaneous) Punch List (PL) Items.

    Based on the USAID Punch List, there were two outstanding PL items. One PL item was remaining, as the other PL item was transferred to the warranty period list. The status of the remaining Civil, Architecture and Mechanical (Miscellaneous) item (not transferred to warranty period) was inspected and verified. The current status of this item, per Tt observation, is closed.

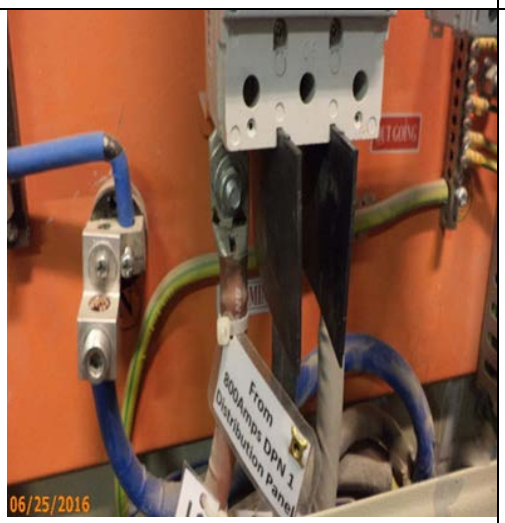
- The lead lined glasses at X-Ray room's # 047&318 in accordance to drawing sheet # A12.01 are installed.

Item #	PL Items	Previous Status as on March 10, 2016	Current Status Per Tt's Observation as of June 25, 2016	Tt Comment
1	Installation of lead lined glasses at X-Ray room's # 047&318 in accordance to drawing sheet # A12.01			Closed

b. Outstanding Electrical Punch List (PL) Items

All Electrical PL Items (not transferred to warranty period list) were inspected and their current status verified. The current status of all outstanding PL items in this section, per Tt observation, are as detailed below.

- The total five number "D1" type lights glass covers are installed at Main Entrance of Conference building and Conference building corridor.
- The phase separator for circuit breakers of mechanical room was installed and 100% completed.
- The contractor has 100% completed the segments of natural conductor in mechanical room panel boards, in which some segments were previously cut.
- The panel board schedules were installed for all panel boards of the hospital building.
- The joint boxes and covers in the Operation & Recovery block, Male 1&2, and Female 1&2 were 100% completed. Additionally, conduit glands were used for installed joint boxes throughout the building.
- The load balance for both generators (500 kVa & 900 kVa) were observed and found to be satisfactory.

Item #	PL Items	Previous Status as of March 10, 2016	Current Status Per Tt's Observation as of June 25, 2016	Tt Comment
1	Total five number "D1" type lights glass covers are not installed at Main Entrance of Conference building, Conference building corridor			Closed
2	Phase separator was not installed for circuit breakers of mechanical room.			Closed
3	The contractor cut some segments of natural conductor in mechanical room panel boards.			Closed

4	Panel board schedules were not installed for all panel boards of hospital building.			Closed
5	The joint box and cover of installed joint box in operation, recovery block, Male 1&2, Female 1&2 were broken requiring replacement also conduit glands were not used for installed joint boxes throughout the building			Closed
6	IOM conducted the Generators load test on December 24 and 26, 2015, test results are negative for both generators (500 kVa & 900 kVa) as load are unbalance, IRD shared this issue with IOM who promised that the load balance for each generator would be done after handover of the project.			Closed

c. Outstanding Site Works Punch List (PL) Items

Based on the Punch List, the status of all Site Works Remaining Items (not transferred to warranty period list) were inspected and the findings, per Tt inspection, are detailed below.

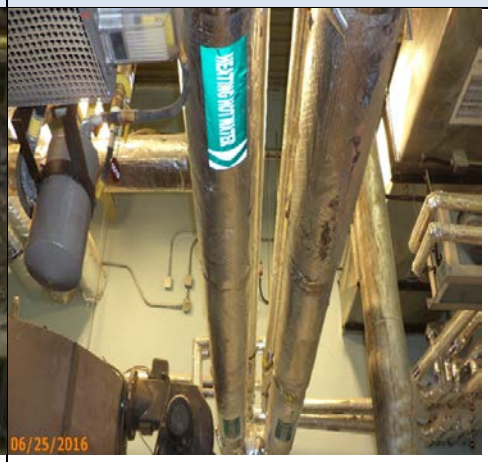
- The cracks in the asphalt wear surface of the road and parking area at west side of the main building and at the top of fuel storage tank's concrete slab were filled and repaired.

Item #	PL Items	Previous Status as of March 10, 2016	Current Status Per Tt's Observation as of June 25, 2016	Tt Comment
1	Cracks are clearly visible on the covered asphalt wearing surface of road and parking area at west side of main building and top of fuel storage tanks concrete slab.			Closed

d. Outstanding General Works Punch List (PL) Items

Based on the Punch List, the status of all General Works Remaining Items (not transferred to warranty period list) were inspected and verified. The current status of all outstanding PL items in this section, per Tt observation, is detailed below:

- Installation of labeling for mechanical systems pipes is 100% completed.
- Installation of the project main signboard is completed.
- Cleaning of the site spaces and areas (both interiors and exteriors) is done. The interior and exterior areas within the project perimeter seems to be clean and acceptable for a completed project site.

Item #	PL Items	Previous Status as of March 10, 2016	Current Status Per Tt's Observation as of June 25, 2016	Tt Comment
1	Installation of labeling for mechanical systems pipes is remaining.			Closed
2	Installation of project main signboard is pending.			Closed
3	Cleaning of site spaces and areas (both interiors and exteriors) is pending.	**OM to complete (Open)**	All the spaces are cleaned	Closed

- **100-BH pending RFIs for below listed changes in the design:**

  Tt Inspectors reviewed and found all the RFIs provided by IOM to be acceptable for the changes that were noted at the site and reflected in the as-built drawings. Below is a description of the status of pending RFIs based on the review of the RFI documents provided to Tt:

  - Cable Tray location change is clarified, and Tt Inspectors approved the RFI# 102.
  - Royal PVC conduits' submittal has been approved by IOM. Based on the standard code mentioned in the submittal, BSS 6099, both colors could be used.
  - The installed lights are wall mounted, are according the design, are approved submittals and have been installed correctly
  - In communication and electrical rooms, D1 type lights were installed instead of J1 type lights. This change is clarified by RFI# 101 and approved by Tt Inspectors.
  - Pelsan brand 4*18 watts lights were installed instead of florescent lights. The brand of the lights is Pelsan. Pelsan Brand submittals is approved.
  - Tumka, Vatan and Fasten wires/cables were all approved by IOM; the submittals were approved.
  - In one level, 4*18 watt lights were not installed because a GI girder was conflicting with the location of 4*18 watt lights. This issue has been clarified, by RFI# 100, and based on the site observation, Tt site inspectors approved it.
  - Color coding of the electrical wiring was changed. This issue has been clarified by RFI# 40 and approved by Tt Inspectors.

- **Equipment and Systems not Tested/Not Witnessed by USAID/Third Party QA**

  Based on the USAID Punch List, the testing and operation of the remaining systems were witnessed, and the below items were observed:

  a. Heating Ventilating and Air Conditioning (HVAC) System:

     During the joint IRD QA/IOM QC T&C inspection of the HVAC on March 3, 2016, testing and commissioning equipment was not available to ensure that the installed Air Handling Unit (AHU), Fan Coil Unit supply and exhaust diffuser discharge flow met the design requirements. This issue was communicated to the IOM mechanical engineer, who stated that IOM had internally tested the HVAC equipment, and the results will be officially submitted to USAID. During the site visit on June 25, 2016, Tetra Tech (Tt) Site Inspectors observed the following:

     - Tt Inspectors visually observed the operation of HVAC system and found that the system was functioning, whereas the equipment was not available to perform the testing and commissioning of the system.
     - Tt Inspectors reviewed and accepted the results of the Testing and Commissioning (T&C) of the air apparatus, the test report of Air Handling and Exhaust Systems that was tested and commissioned by IOM QC internally using a third party (AIRFLOW). The report for these tests is dated November 23, 2015. Tt accepted the results of all these tests, certified by the testing contractor.
     - Tt Inspectors reviewed the testing and validation report for the fan coil system tested and commissioned by IOM QC internally using a third party (AIRFLOW). The test report is dated November 16, 2015. Tt found the test results unsatisfactory due to significant deficiencies observed in the testing results. There is 20-80% difference between the design and actual test measured values in the test report. Tt received the HVAC testing certificate from IOM on July 3, 2016, but it was not certified by the third party. IOM is still requested to provide the Fan Coil System test results certified by the third party.

b. Hydronic System:

Based on the documents provided, a joint testing and commissioning inspection of the (T&C) Hydronic System was conducted by IRD QA and IOM QC on March 3, 2016. It was noted that the system installation was completed and was functioning, though leaks were observed at some of the gate valves. IOM's mechanical engineer informed the inspection team that IOM has plans to install high quality gaskets to prevent leakage from the leaking gate valves in the future. During the site visit on June 25, 2016, Tetra Tech (Tt) Site Inspectors inspected all the valves and observed the following:

- No leakage was observed from the gate valves that had been noted during the joint IRD QA/IOM T&C inspection of the Hydronic System on March 3, 2016.

c. Domestic water system:

During the joint IRD QA/IOM T&C inspection of the Domestic Water Supply System on March 3, 2016, the water treatment plant was tested and found to be working as required. It was also determined that the permanent submersible pump was installed with water level sensor at 75m well depth. During this joint inspection, IRD was concerned about the determination of the static and dynamic levels of water by the IOM engineer for installation of the submersible pump at the correct depth/location. In the event of a drop in water level, the sensor might not work and might result in damage to the submersible pump running dry. Additionally, if the pump is installed at the screen location, it may also result in damage to the screen/filter pack. During the site visit on June 25, 2016, Tt Inspectors observed the following:

- IOM did not provide any documents, such as test reports of water well pump and well log reports to verify the dynamic and static water level and screen location.
- Tt Inspectors inspected and found that the hot water boiler ignition rods were repaired and all three hot water boilers were functioning well.
- Tt Inspectors inspected and found that all sensor mixers were fixed and were currently working properly.

d. Medical Gas System:

During the joint IRD QA/IOM T&C inspection on March 3, 2016, the medical gas system was tested and checked, and was found to be working.

As a common practice per health and safety requirement, and per CHEF-02 project technical specifications section 3.01, it is recommended that the medical gas system piping and components should be washed with hot alkaline-cleaner water solutions, like sodium carbonate or sodium phosphate in the proportions of 450 grams of the chemical to 11.3 liters of water. During the (Tt site visit on June 25, 2016, IOM did not present any document to verify that IOM had performed cleaning of the medical gas system piping and equipment as per CHEF-02 project technical specifications section 3.01. Tt received the certificate from IOM certifying the cleaning of the medical gas system, provided by IOM and dated July 3, 2016.

e. LPG System:

During the joint IRD QA/IOM T&C inspection on March 3, 2016, of the LPG system**,** it was found that IOM had not provided gas so that the inspectors could perform/witness the testing of the LPG system. During the site visit on June 25, 2016, Tt Inspectors observed the following:

- The contractor had supplied LPG to the site. Tt engineers performed a test run of the system and found that the LPG System was functioning properly.

f. Fueling System:

During the joint IRD QA/IOM inspection on March 3, 2016, of the T&C of the fueling system the inspectors noted that the level switch, audible alarm system and fuel pump installations were completed, but the installation of the fuel pump control systems was in progress and were not

completed. The inspectors wanted to run the fueling system for testing. However, IOM did not provide fuel, and the pump control system installation was not completed. Therefore the inspectors were unable to test the fueling system to ensure that all automatic fuel system and pumps were working as required by the design. During the site visit on June 25, 2016, Tt Site Inspectors observed the following:

- IOM provided fuel and the pump control system installation was completed. Tt inspectors tested and verified that automatic fuel system and pumps were working as required by design.

g. Labeling of the Electrical and Mechanical Systems:

- Tt Inspectors observed that the electrical and mechanical systems' parts and equipment were not labeled sufficiently. Therefore, this PL item is yet not rectified or fixed, and remains open.

20-bed Khair Kot Hospital

Prior to the site visits, Tt Inspectors reviewed all available drawings, specifications, punch list items, scope of work and all other available documents related to the project.

During the site visit, Tt Inspectors noted the following items:

➢ **Outstanding Punch List items for 20-Bed Khair Kot Hospital**

A summary update on all outstanding PL items rectification status for 20-bed hospital in Khair Kot, Paktika province is provided below.

a. Outstanding Electrical Punch List (PL) Items:

Based on the Punch List, the status of all outstanding Electrical items were inspected, and the below findings were observed:

No.	Punch List Item	IOM Observation March 10, 2016	Tt Observation June 30, 2016	Status
1	Gaps around joint boxes need proper filling and later painting throughout the hospital building.	Filling around joint boxes and painting was done, but the color of carried out paint is not maching with previous painted surface. See photo. **Accepted with framed painting on April 5, 2016**	Gaps around all joint boxes were filled with gypsum and painted properly. Newly painted areas' color was also matching with the paint of the existing surfaces.	Closed
2	Gaps around all communication and electrical outlets need proper filling and later painting throughout the hospital building.	Filling around all communication & electrical outlets, was done, but the workmanship is not satisfactory, and the covering paint of the filling did not match with previuos painted surface. **Being esthetic, this is accepted April 5, 2016**	Gap around all communication and electrical outlets were filled and painted properly. Newly painted areas' color was also matching with the paint of the existing surfaces.	Closed
3	All hospital building switches and outlets need proper cleaning.	80% of the cleaning work of all Hospital building Switches and Outlets are completed. 20% is still pending. Not rectified **IOM to complete (open) April 5, 2016**	All hospital building switches and outlets were cleaned properly and the workmanship was satisfactory as well.	Closed

b. Outstanding Mechanical Punch List (PL) Items

Based on the Punch List, the status of all outstanding Mechanical items were inspected, and the below findings were observed:

No.	Punch List Item	IOM Observation March 10, 2016	Tt Observation June 30, 2016	Status
1	The main intake pipe with filter for the underground tank is not as per the drawing, the drawing sheet M-202 clearly indicated that the intake fuel pipe needs to be across the roof slab to have a free access and fill the tank easily and properly.	Installation of the main intake pipe was completed, but the filter still remains. On February 3, 2016 during CHEF Technical meeting, IOM accepted to install the filter and provide safe cover for the pipe. **IOM to complete (open)** **April 5, 2016**	The main intake pipe for the underground fuel tank was installed. IOM QC promised provision and installation of filter and proper cover for the intake pipe during warranty period. No installation date was provided.	Open
2	Some of the accessories for the radiator are not installed like monometer, Pressure gage, Motorize mix valve, which is reflected in approved drawing section 03, sheet M-202.	Accessories for radiator were installed, but the same were not in accordance to the drawing. On February 3, 2016 during the technical meeting, it was agreed that IOM will issue RFI for the change from drawing. RFI is pending. **IOM Issue RFI (open)** **April 5, 2016**	All required accessories such as pressure gauges, thermometers, thermostats, air vent valves and motorized mix valves were installed for burners/boilers and fuel day tank in Mechanical Room for central water heating system, but some of the mentioned accessories were not installed in conformance with the approved drawings. Tt approves the RFI #71. Thus, the issue is closed.	Closed
3	Radiator new installed pipe is 1 inch in the drawing, but the installed last radiator pipe is 0.5 inch at corridor 166.	On February 3, 2016 during CHEF Technical meeting IOM reported that this is the last radiator in the line and did not affect the system. The issue will be closed, after receipt of RFI from IOM on the same. **IOM to issue RFI (Open)** **April 5, 2016**	For the last radiator at Corridor 184, the contractor has installed 0.5 Inch supply and return pipes which is against drawing, but in conformance with the requirements and manufacturer recommendations for the last radiator in a network. Tt approves the RFI #72, and thus, the issue is closed.	Closed
4	Radiator fuel pumps had some problems need to be fixed and will be re-scheduling for the testing and commissioning.	Not started yet. On February 3, 2016 during CHEF technical meeting IOM informed that this is planned to be fixed during the Testing and Commissioning. **IOM to arrange testing (Open)** **April 5, 2016**	Automatic fuel transfer system and fuel pumps for burners' day tank were tested and operated in the presence of Tt QA Inspectors. It was witnessed and observed that both the system and the pumps were functioning properly.	Closed

c. Outstanding Civil, Architectural and General Work Punch List (PL) Items

Based on the Punch List, the status of all outstanding Civil, Architectural and General Work items were inspected, and the below findings were observed:

No.	Punch List Item	IOM Observation March 10, 2016	Tt Observation June 30, 2016	Status
1	Wardrobe is not provided in Laundry room (170), Female ward. See drawing A103.	Table is provided on the Laundry room, whereas drawing suggests for Wardrobe. On February 3, 2016 during CHEF Technical meeting, IOM pointed out that installation of Wardrobe in Laundry room would be considered. **IOM to provide Wardrobe or dress hangers on the wall. (Open) April 5, 2016**	The laundry room is always wet and fully humid. So based on the drawing A-103, IOM installed stainless steel table to meet the requirements. The drawings doesn't call for wooden or any other kind of wardrobe inside of the laundry room.	Closed
2	On the approved drawing sheet A-103, room number 186 reflected to install the table around the dishwasher.	Table is provided in the Laundry room, whereas drawing suggests for room 186. On February 3, 2016 during CHEF Technical meeting, IOM pointed out that installation of Wardrobe in room 186 would be considered. **IOM to provide table around dishwasher as per the drawings (Open) April 5, 2016**	Table around the dishwasher will be provided and installed in conformance with the approved drawings during warranty period. PL item found to be OPEN, and remains OPEN.	Open
3	Site cleaning required.	80% of site cleaning work has been completed. 20% still remains. **IOM to clean the site 100% (Open) April 5, 2016**	Overall site was cleaned properly, and the workmanship was satisfactory as well.	Closed
4	Big sizes of the six trees were dead. Need replacement with new trees.	Not started yet. IOM reported that planting of trees to be done in March 2016. **IOM to replant to replace dead trees (Open) April 5, 2016**	Six dead trees were observed which still need to be replaced. This activity can be done in spring of 2017.	Open

- **Equipment at the 20- Bed Khair Kot Hospital not tested/not witnessed by USAID**

Tt Inspectors witnessed the testing and operation of remaining systems, and the below findings were observed:

a. Fuel Transfer Pumps:

Tt Inspectors observed that fuel was available in the underground tank. The automatic fuel transfer system and fuel pumps for burners' day tank were tested and operated in the presence of Tt QA Inspectors. It was witnessed and verified that both the system and the pumps were functioning properly.

b. HVAC (Heating Ventilation and Air Condition) System Parts, including the Air Handling Unit (AHU):

The HVAC system was tested and commissioned previously and witnessed by USAID/IRD. It was found that the system and its parts were working properly, but the air flow at the furthest point of the facility was minimum and insufficient. After detailed inspections by IOM QC, it was reported that the installed AHU was of insufficient capacity, resulting in lower air transfer for the areas of the facility located furthest from the AHU. IOM has promised replacement of the AHU with higher capacity as specified in the design. Tt Inspectors visually checked and observed that IOM has not replaced the under-capacity AHU as of month of June 2016.

IOM QC said that they will replace the AHU with sufficient capacity as per contract requirements during the warranty period.

c. LPG System:

Tt Inspectors observed that liquid propane gas (LPG) was available in the tank. They also witnessed the testing and operation of LPG system and found that the system was functioning properly.

d. Chlorination System:

Tt Inspectors observed that the chlorination system was not installed for water supply system. IOM QC told Tt inspectors that provision and installation of chlorination system was not part of their contract.

➢ **20- Bed Khair Kot Hospital Missing RFIs**

Tt Inspectors reviewed and found all the RFIs provided by IOM were acceptable for the changes noted at the site and reflected in the As-built drawings. The findings of the Tt inspectors on the missing RFIs are as follow:

- The radiator pipe shown in the drawing is 1 inch diameter, but the installed last radiator pipe at corridor 166 is 0.5 inch. **(Item #3 under mechanical PL items.)**, based on the site observation, Tt Site Inspectors approved RFI # 72.
- Some of the accessories for the radiator system like manometer, pressure gage and motorized mixer valve, are not installed as per the approved drawings section 03, sheet M-202. **(Item #2 under mechanical PL items.)** Based on the site observation, Tt Inspectors approved RFI No # 72.

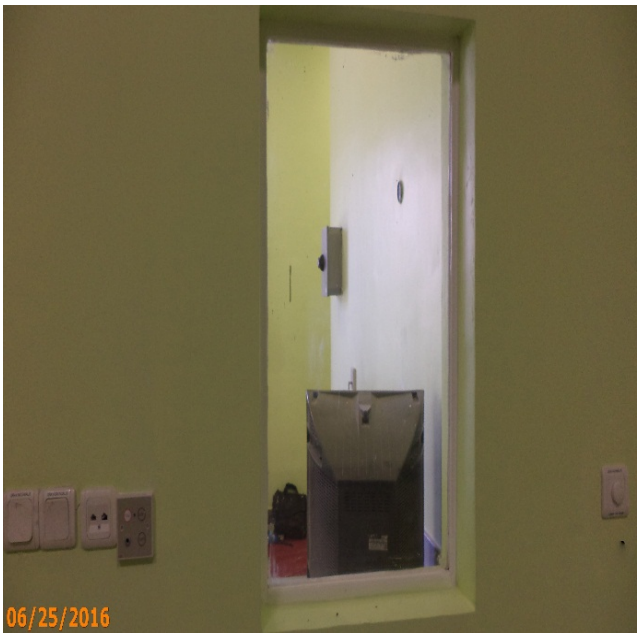
PHOTOGRAPHS

100-bed Gardez Hospital

Photograph 1: The cracks were filled with bonding material MA, 06/25/2016.

Photograph 2: The lead lined glasses installed at X-Ray Room, MA, 06/25/2016

Photograph 3: The cracks were filled with bonding material MA, 06/25/2016.



Photograph 4: The lead lined glasses installed at X- Ray Room, MA, 06/25/2016.

Photograph 5: The Phase separator and the segments of natural conductor, MA, 06/25/2016.

Photograph 6: Load balance for each Generator (500Kva & 900Kva) MA, 06/25/2016.

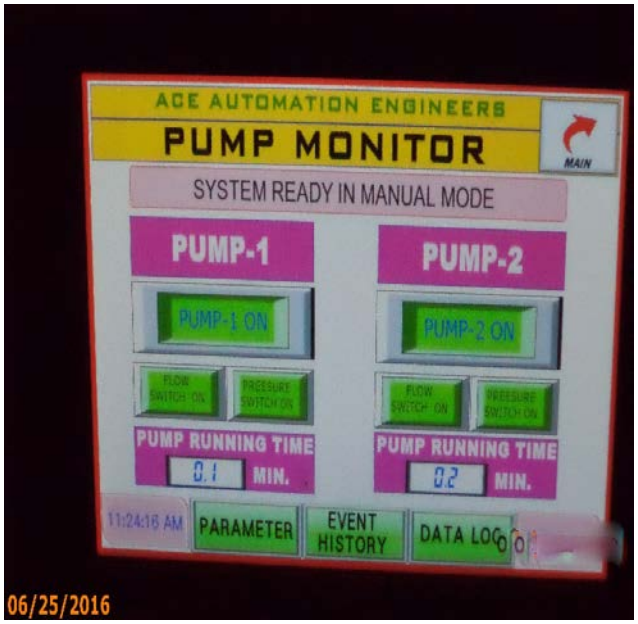
Photograph 7: 500kVA Diesel Generator was running during load balance, MA, 06/25/2016.

Photograph 8: Load balance for each Generator (500Kva & 900Kva) MA, 06/25/2016.

Photograph 9: Installation of project main signboard MA, 06/25/2016.

Photograph 10: The ignition Rod of the Boilers are repaired, MA, 06/25/2016.

Photograph 11: IOM provided fuel and the pump control system installation was completed, MA, 06/25/2016.



Photograph 12: The fuel pump control system installation was completed and the pumps were working, MA, 06/25/2016.

Photograph 13: The Lack at the lower side of fuel tank was repaired, MA, 06/25/2016.

Photograph 14: The LPG Tanks were filled with 80% of its capacity, MA, 06/25/2016.

Photograph 15: The LPG Tanks were filled with 80% of its capacity, MA, 06/25/2016.

Photograph 16: The LPG Gas flows with enough pressure and velocity at outlet point in the laundry, MA, 06/25/2016.

Photograph 17: The LPG Gas flows with enough pressure and velocity at outlet point in the kitchen, MA, 06/25/2016.

Photograph 18: The sensor of the sinks were working, MA, 06/25/2016.

Photograph 19: The sensor of the sinks were working, MA, 06/25/2016.

Photograph 20: The sensor of the sinks were working, MA, 06/25/2016.

Photograph 21: The labeling of Mechanical Piping System was 100% complete, MA, 06/25/2016.

Photograph 22: The labeling of Mechanical Piping System was 100% complete, MA, 06/25/2016.

Photograph 23: The labeling of Mechanical Piping System was 100% complete, MA, 06/25/2016.

Photograph 24: The joint box and cover of installed joint, MA, 06/25/2016.

20-bed Khair Kot Hospital

Photograph 1: Indoor Lighting fixture, FH, 06/30/2016.

Photograph 2: Socket, Switch, Network outlet, Nurse Calling Switch on the beds, FH, 06/30/2016.

Photograph 3: On/Off Lighting Swith, Fan Switch, FH, 06/30/2016.

Photograph 4: Operation Theater Room Lighting, FH, 06/30/2016.

Photograph 5: Underground Fuel Tank, FH, 06/30/2016.

Photograph 6: Intake Fuel Pipe, FH, 06/30/2016.

Photograph 7: Boilers' Accessories, FH, 06/30/2016.

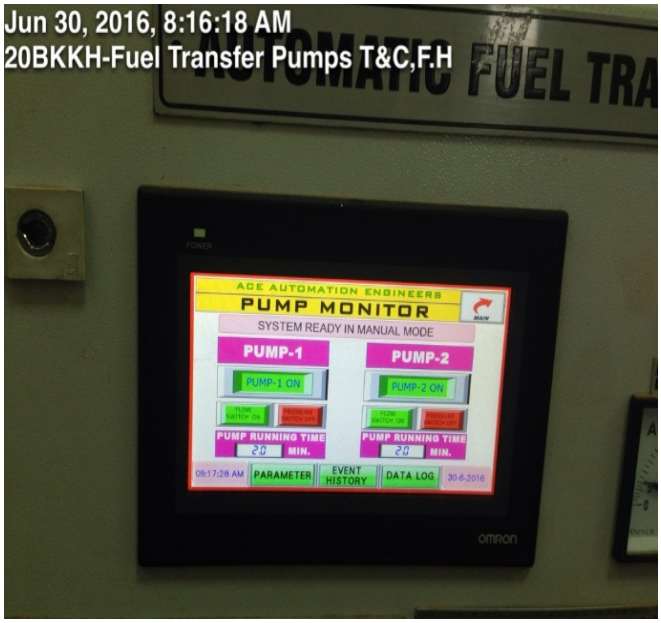
Photograph 8: Central Water Heating Accessories, FH, 06/30/2016.

Photograph 9: Fuel Day Tank Accessories, FH, 06/30/2016.

Photograph 10: Radiator 1/2 Inch Pipes, FH, 06/30/2016.

Photograph 11: Fuel Transfer System T&C, FH, 06/30/2016.

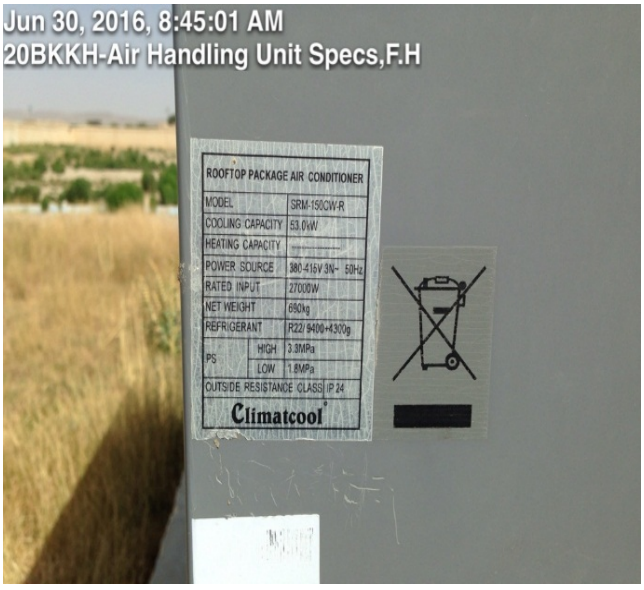
Photograph 12: Fuel Transfer System T&C, FH, 06/30/2016.



Photograph 13: Fuel Transfer System T&C, FH, 06/30/2016.

Photograph 14: LPG System T&C, FH, 06/30/2016.

Photograph 15: Under Capacity AHU, FH, 06/30/2016.



Photograph 16: AHU Specs Label, FH, 06/30/2016.

Photograph 17: View of the site which was observed as having been properly cleaned, FH, 06/30/2016.

Photograph 18: View of a dead tree on site which needs to be removed and replanted, FH, 06/30/2016.

Photograph 19: View of the interior site which was observed as having been properly cleaned, FH, 06/30/2016.

APPENDICES

APPENDIX A – SUPPORTING DOCUMENTATION FOR 100-BED GARDEZ HOSPITAL

APPENDIX B – SUPPORTING DOCUMENTATION FOR 20-BED KHAIR KOT HOSPITAL